

NATIONAL INSTITUTES OF HEALTH  
WARREN GRANT MAGNUSON CLINICAL CENTER  
NURSING DEPARTMENT

**Standards of Practice: Care of the Patient Receiving Intravenous Cytotoxic or Biologic Agents**

**I. Assessment**

**A. General**

1. Assess patient and/or parent or caregiver understanding of the treatment plan, expected treatment outcomes, and potential risks.

**B. Medical Record Review**

1. Assess presence of a completed consent (assent for children when appropriate) form.
2. Review prescriber progress note for documentation of dose level if appropriate, protocol exemptions, and/or rationale for dose modifications.
3. Review prescriber orders against clinical trial protocol, clinical map if applicable, and research data sheets if applicable for all ancillary medications and therapies.
4. Review pre-treatment lab. Confirm the treatment plan with the prescriber if any results are abnormal or exceed protocol specifications.
5. Review prescriber orders for treatment of extravasation and/or adverse drug reaction if applicable.
6. Review baseline assessment including height, weight, BSA, vital signs, history, physical examination, and known allergies.
7. Review history of chemotherapy-induced side effects and successful management strategies.

**C. Calculations/Drug Label Verification**

**With a second RN:**

1. Calculate the drug dosage including any dose modification and complete chemo worksheet (Appendix A).
2. Compare calculated dose to prescribed dose. If there is a discrepancy of 10% or more for adults and 5% or more for pediatric patients, notify the prescriber and pharmacist. Hold drug administration until the dosage is verified and documented
3. Check the diluent type and the drug container's label against the prescriber order for:
  - a. Patient name and medical record number

- b. Cytotoxic/Biologic agent, diluent, route (example IV Push, IV piggyback, or continuous infusion), dose, volume, date, infusion start time, length of infusion, and drug expiration
- c. Verify the infusion or ambulatory pump program against the prescriber's order.

**B. Venous Access Devices**

- 1. Assess pre-existing peripheral lines for patency, brisk blood return; flush solutions should flow freely to gravity. Inserting a peripheral IV just prior to administration of vesicant agents is strongly recommended.
- 2. Assess CVAD for patency, brisk blood return, and ease of flushing.
- 3. Assess site for swelling, erythema, pain, drainage.
- 4. Assess for signs or symptoms of venous obstruction.
- E. Assess for previous therapy related acute or delayed complications, specific toxicities or adverse reactions.
- F. Verify that emergency medications are readily available in the area where patient will receive treatment.

**I. Interventions**

**A. General (non-vesicants, non-irritants, vesicants, and irritants)**

- 1. Ensure that emergency equipment is available in patient's room:
  - a. Normal saline flush solution
  - b. Oxygen
  - c. Suction machine
  - d. Vital sign monitor
- 2. Assemble personal protective equipment (gloves, goggles, gown).
- 3. Verify spill kit readily available on unit.
- 4. Dispose of hazardous drug supplies according to the Procedure: Safe Handling and Disposal of Hazardous Drugs.
- 5. Provide patient and family teaching including information about self-care and potential symptoms requiring health care provider attention.

**A. Venous Access**

- 1. Obtain peripheral IV access in a vessel of the upper extremity. Peripheral venous access in a lower extremity is not recommended.
- 2. Avoid:
  - a. Areas of hematoma, edema, impaired lymphatic drainage, phlebitis, inflammation, induration, or obvious infection and sites of previous irradiation.

- b. Fragile, small, or low flow vessels such as the dorsal aspect of the wrist.
- c. Using veins that have been accessed within the previous 24 hours.
- d. Sites distal to previous IV sites or previous sites of extravasation.
- e. Vessels of the hand, wrist, and antecubital fossa for administration of vesicants/irritants
- 3. If local anesthetics, e.g. EMLA®, are used to facilitate venous cannulation, ensure that the effects of anesthesia have subsided prior to administration of cytotoxic agents.
- 4. IV site dressing must allow for continuous visual inspection before during, and post drug administration.
- 5. Verify patency and blood return of venous access pre- and post- administration.
- 6. At the completion of cytotoxic/biologic agent administration, flush the line with a compatible flush solution to ensure maximum drug delivery as per nursing department drug administration procedures. For specific research studies, check protocol and consult Pharmacy for any special guidelines on drug administration.

### **C. Administration**

#### **b. IV Push Administration of Vesicants/Irritants via peripheral IV and CVAD**

- a. Infuse a free-flowing compatible flush solution during administration of the cytotoxic agent.
- b. Administer agent through the IV administration set at the most proximal port to the patient.
- c. Check for blood return pre-administration, every 2 ml of drug administration, and post-administration.
- d. Observe the IV site continuously.

#### **c. Peripheral Piggyback Administration of Vesicants/Irritants**

##### **a. General**

- 1. Administer the cytotoxic agent as the secondary infusion piggybacked to the primary line at the most proximal port to the pump.
- 2. Secure the IV tubing using tape or a secure locking device.

##### **b. Vesicants**

- 1. Use of an infusion pump is prohibited.
- 2. Check for brisk blood return pre-administration, every 5 minutes during administration, and post-administration.
- 3. Observe the IV site continuously.

##### **c. Irritants**

- 1. Check for brisk blood return pre- and post-administration.
- 2. Observe the IV site every 15 minutes until infusion completed.

### **3. CVAD Piggyback Administration of Vesicants/Irritants**

- a. Secure the IV tubing using tape or a secure locking device.
- B. Administer the cytotoxic agent as the secondary infusion piggybacked to the primary line.
- c. Observe the IV site and connections: for inpatients every hour; for outpatients monitor the site frequently and instruct the patient to call for any complications.

### **4. Peripheral continuous (large volume) infusion of vesicants is strictly prohibited.**

5. Peripheral continuous (large volume) infusion of irritants: an IV infusion pump is required.

### **6. CVAD Continuous (large volume) Infusion of Vesicants/Irritants**

- a. An infusion device is required.
- b. Observe the IV site and connections every 4 hours for inpatients. Instruct outpatients to monitor site frequently.

## **C. Adverse Event**

### **1. General**

- a. If adverse event occurs, stop infusion, notify prescriber and/or other clinical resources (e.g. clinical pharmacy specialist or clinical nurse specialist); follow treatment guidelines.
- b. After resolution of adverse event, consult with prescriber before continuing with administration.

### **B. Extravasation Guidelines for Vesicants/Irritants**

- a. Stop administration of the cytotoxic agent
- b. Disconnect the IV line at the point closest to the vascular access device
- c. Aspirate residual drug from the vascular access device
- d. Estimate the amount of drug extravasated
- e. Notify the prescriber and clinical pharmacy specialist
- f. Administer an antidote if appropriate according to Appendix B, "Guidelines for Management of Vesicants and Irritants"
- g. Remove peripheral access device (this does **not** include PICCs or midlines). Remove needle from implanted port
- h. Assessment of extravasation site:
  1. Inpatients: RN uses an indelible marker to indicate any area of induration and swelling. Assess every 8 hours for 48 hours for pain, erythema, induration, mobility, skin changes, and necrosis. Complications are assessed until resolved.
  2. Outpatients: Assess as described above. Nurse instructs patient/significant other to report any complications.

- i. Size the area of extravasation by measuring a perpendicular length and width at the widest points. (Refer to Appendix C for additional information on the procedure for determining measurements)
- j. Protect the site from undue pressure.
- k. Apply warm or cold compresses as indicated in Appendix B
- l. Verify consent for photograph and then obtain photograph of site (contact Clinical Center Photography)
- m. Apply dressing as indicated.
- n. Elevate and rest the extremity.
- o. File an occurrence report.

**B. Flare Reaction**

- a. Stop the administration of the cytotoxic agent.
- b. Flush the IV line with a compatible flush solution.
- c. Administer hydrocortisone and/or Diphenhydramine IV followed by IV flush solution according to prescriber orders.
- d. Once flare has subsided, resume administration at a slower infusion rate.
- e. Monitor for recurrence of flare reaction and repeat sequence listed above according to prescriber orders.
- f. For patients scheduled to receive same cytotoxic agent in the future, discuss with prescriber strategies to minimize risk of another flare reaction, i.e., premedications, slower infusion rate, and dilution of cytotoxic agent.

**4. Hypersensitivity or Anaphylactic Reaction**

- a. Discontinue drug administration immediately and maintain line with compatible flush solution.
- b. Notify prescriber STAT of reaction.
- c. Implement prescriber orders.

**I. Documentation**

**A. Document in MIS:**

1. Protocol, cycle, day, week, and dose level if appropriate.
2. Laboratory test results reviewed.
3. Cytotoxic agent, dose, route, container number if applicable, lot number if applicable, time of administration, and length of infusion.
4. Rationale for dose modification
5. Patient/Family teaching
6. Presence of a complete consent or assent (minors only) form
7. Presence of Durable Power of Attorney document as required by treatment protocol

8. Name of staff who double checked the cytotoxic agent dose calculations, drug label, and infusion device settings
9. Venous access device, location, patency and site assessment pre-, during, and post-administration.
10. Patient's tolerance of procedure and interventions
11. Complications or adverse drug reactions as well as interventions provided

**C. In the Event of Extravasation document:**

1. Date and time of extravasation
2. Patient complaints before, during and after extravasation
3. Estimated amount of extravasation
4. Agent extravasated; antidote administered.
5. Document date, time and those notified (prescriber, clinical pharmacy specialist).
6. The dimensions of the injured site and the site assessment.
7. The date and time of any photographs.
8. Dates of any follow-up evaluations and/or consultations such as surgery, dermatology, or rehabilitation.

**I. References:**

1. Cancer Chemotherapy Guidelines:
  - 1999 Cancer Chemotherapy Guidelines and Recommendations for Practice. Oncology Nursing Society Press, Inc. Pittsburgh Pa.
  - 1992 Recommendations for the Management of Vesicant Extravasation, Hypersensitivity, and Anaphylaxis, Recommendations for Nursing Practice in the Acute Care Setting
2. 1999 Chemotherapy and You: A guide to self-help during Cancer Treatment. National Institutes of Health, National Cancer Institute. Revised 1999. NIH publication #99/1136.
3. 1996 Guidelines for Using Granisetron and Ondansetron at the NIH Clinical Center
4. 1993 May/June Pharmacy Update EMLA® 1995 April Controlling Occupational Exposures to Hazardous Drugs by OSHA Technical Manual
5. McCaffrey Boyle D. & Engelking C. Vesicant extravasation: Myths and Realities, ONF, Vol. 22, No 1, 1995 pages 57-68.
6. 1993 Living with Chemotherapy
7. 2001 Nursing Department Policy: Hazardous Drugs, Safe Handling of (formerly "Safe Handling of Cytotoxic Agents") (8/01)
8. 2001 Nursing Department Procedure: Hazardous Drugs (HD), Safe Handling and Disposal of (8/01)
9. 2001 Nursing Department Policy, Intravenous Cytotoxic Agents Administration (8/01)

10. 2001 January, Maryland Board of Nursing, Nurse Practice Act, Baltimore Maryland, Title 10, Subtitle 27, Chapter 20, Supplement 99, pages 1592-55 – 1592-68.

**I. Appendices:**

Appendix A Chemo Work Sheet

Appendix B Guidelines for Managing Extravasation with Vessicant and Irritant Drugs

Appendix C Guidelines for Measuring and Documenting Extravasation Injuries

Approved:

---

Clare E. Hastings, RN, Ph.D.

Chief, Nursing and Patient Care Services

Developed:4/11/96

Implemented: 12/96

Revised: 11/99, 8/01, 4/02

G:\SOP\IVCTXSOP.DOC

**A. CIS/2/13/01**



CYTOTOXIC

orksheet multicycle.orksheet single cyc. rksheet august 200



CYTOTOXIC



CYTOTOXIC



Appndx\_B\_-\_072001  
\_REV.pdf



